# Menlo Park Notebook #119 [N-80-09-27]

This notebook covers the period September-October 1880. Most of the entries are by Francis Jehl. There are also occasional entries by Francis Upton. Many of the entries are initialed by Edison. The book contains notes and tables of tests relating to the first lot of lamps (numbers 1-100), which was sent from the lamp factory to the laboratory for testing. There is also a copy of a note from Batchelor to Upton concerning these lamps and a list, prepared later, of lamps sent. The label on the front cover is marked "Factory," "Jehl," "Oct 1880," and "Lot 1 Lamps." There is an index on the inside front cover. The book contains 284 numbered pages.

Blank pages not filmed: 272-275, 280-281.

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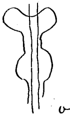
Sept 27 1880

Note from Mr Bachelor to Mr Upton) I sent 17 Lamps with nickel clamps of this pattern



The wires put through thin glass which is made concave at the point where the wires come out. I now send more and that makes

17 with nickel
21 "
38

Also 9 with platinum clamps of which 6 bad viz – 1 Blue light
3 split in Clamps
1 badly bent
1 high resistance

All these Lamps are made from the fishing rod Bamboo cut previous to September 25th and are unpicked; so that we consider them poor and call them ((Fibres No 1)

sig
Bachelor

~~20 cell = 32~~
~~E M F 2~~
~~E M F 7 257~~

20) 3765 (188
176
160
165

---

(1)

E. M. F. 2[illegible]0 — 250
Res. 37650
200
Can. 48.
Battery = 32 - 32.

TAE

Sept 27 1880

2.1673
2.1673
1.6164
7.7258
3.7068

5090

140:153:: 159
2014
1847
8539
2400

174
159
+15

8953

140:153::159:a

$\frac{1}{a} = \frac{153 \times 159}{140}$

153
140
153×159

140 2.1461
2.1461
1.6464
159 7.7986
3.7372

5460

No 1

| | | | |
|---|---|---|---|
| Ewt | 250^d R | £ 250 | ~~129~~ |
| Res | 37650 ÷ 200 | | 188 R |
| Candle | 48 | | 21 Res |
| Battery | 20 cells = 32.-32 | | |

1.8) ~~7~~500 (139
70
54
160
~~4~~ 7

20) 3765 (188
20
176
160
165

2.1553
2.1553
1.6464
7.7645
3.7215    5260

---

Cur7 242 – 243    1430
~~1846~~
Bat 32 – 32    172 Res
Res $\frac{31400 + 3000}{200}$    2.5 oh
(34400
17200
Cav 48

31400
3000
20) 34400 (172
20
144
140
4

1.8) 2420 (134
18
62
54
80

2.1818
2.1818
1.6464
7.7258
3.7358 5440 ft. lbs.

---

No 3

EMF 259 — 259 152 ~~143~~ v

Res 37650 / 200 188 Res
188.

Batt 32 — 32 14 ohms

Curr 48

18) 2590 (143
18
79
72
70

20) 3765(0 (188
20
176
160
165
160

2.1367
2.1367
1.6464
7.8125
3.7323

5400

4

Emf 234 — 234
Res $\frac{25150 + 5700}{2000}$
Bat 32 - 32
Cond 48

1370
154 ohms
23 ohms
57
308
154

1.8) 234 (130 Kai
18
54

25150
5700
20) 30850 (154
20
108
100
85

17) 238 (140
 7
 68

2.1461
2.1461
1.6464
7.7773
3.7159 5200

~~144~~

140 164 167 167
164
668

7 3 8 8 19
T40
260

185
167

~~167~~

8153
1399
7799
7451
2549

180
166
+14

138 2.1399
2.1399
1.6464
166 7.7799
3.7061

5080

Emp 2.38 — 238
Bat 32 — 32
Res ~~27650~~ 31400 + 2000
2000
Cand 48

140 ~~1320~~
167 Res
28 ohers

(334
167

18) 2380 (132
18
58
54
40

TM

31400
2000
20) 33400 (167
20
134
120
140

2.1875
2-1875
1.6464
7.7100
3.7314

5380

EMF 263 - 265 - 154 ~~146~~ V.
195 ohms

Res $\frac{37650 + 1500}{200}$
12 ohm

Bat 32 — 32

curr 48

Blume

.376
15
391
195

TAG

1.8)2630(146
18
83
72
110
108

37650
1500
20)39150(195
20
191
180
115

2.1987
2.1987
1.6464
7.7258
3.7696

5880.

---

Ell 270 — 270
Res $\frac{37650 + 100}{200}$
Bat 32 — 32
Cand 48

188 Reo
1580

7 ohms

377
188

37650
100

20) 3775 0 (188
20
177
160
173

1.8) 1700 (150
18
90

2.1931
2.1931
1.6464
~~7.7447~~
3.7773

5990

No 8

Elk 264 — 268
Res $\frac{31400 + 47000}{200}$
Cans 48
Batt 33 — 32

180 ohms
v ~~156 ohms~~
150 ohms

314
47
361
180

31400
4700
20)36100(180
20
161
160
10

1.8)2640(146
18
84
72
120
108
12

2.1931
2.1931
1.6464
7.7399
3.7725

5910

---

# No 9

Emf 266 – 264
Res $\frac{31400 + 5000}{2000}$
Cam 48
Bat 32 – 32

1560
1470
182 ohms

9 ohms

(364
1.82

18) 2660 (147
18 84
86
72
140

3
18
4

31400
5000
20) 36400 (182
20
164
160
4

2.1553
2.1553
1.6464
7.7496
3.7066  5090 ftlbs.

# No 10

Att 243 — 243  1435
~~1355~~
Res 31400 + 4200  178 Res
2000
Bat 32 — 32  26 obus
Cavl 48

314
42
356
178

81
2
160

31400
4200
2)35600(178
20
156
140
160
160

ok?

2.1553
2.1553
1.6464
7.7520

3.7090     5.120

---

Emf ~~256~~ ~~259~~ 243 – 243

Res $\frac{31400 + 40000}{200}$

~~Cnd~~

Cond 48

Bat 32 – 32

1430
~~1350~~
177 Res
25 ohms

354 / 177

31400
40000
20) 35400 (177
20
154
140

1.8) 2430 (1350
18
63
54
90
90

The?

2.1931
2.1931
1.6464
7.6799
3.6925

4920

---

No 12

EMF 2.66 - 266
R $\frac{37650 + 4200}{2000}$
Bat 32 - 32.5
Cond 4.8

1560
~~1470~~
209 Res
10 ohms

376
42
418
209

$$1.8\overline{)2660}(147$$
18
86
72
140

TaE

18
~~8~~
144 5
18
7
65

266
88
176

26
5

37650
4200
$$20\overline{)41850}(209$$
185
180

2.1492
2.1492
1.6464
7.7375

3.6823 4210

No 183

CMF ~~252~~ 242 — 240

Res $\frac{31400 + 5200}{200}$ ~~1480~~
183 Res

Cand 48

29 Res

Bu 82 — 82

314
52
366
183

1,8) 2449 (132
18
64
54
70
54
16

Tal

31400
5200
20) 36600 (183
20
166
160
60
60

2.1732
2.1732
116464
7.7100
3.7028    5040

No 14

E M7    269 — 2690    1580
Rio    37650 + 1500    195 Res
Nat    31 — 33    2000    7 others
Card    48

269
269
138
149

3)138
1

3)138
1

376
15
391
195

149

1.8)2690(149
18
89
72
170
162
7

37650
5000
20)39650(195
38
165

2.1644
2.1644
1.6464
7.7520
3.7272

5340

No ~~213~~ /5 — 146~~0~~

EMF 250-250 ~~1350~~ 177 ohms

Res $\frac{31400+4000}{2000}$ ~~33~~ R

21

Bat 31, 33

Cav 48

354
177

1.8) 2500 (138
18
70
54
160 7
2

31400
4000
20) 35400 (177
20
154
140
14

1.08
20
2.160
64

$\frac{400}{64} \times 20 \times 1.08$

1.3345
1.8062
$\bar{1}$.5283
2.6021
2.1304
2.1304
1.6444
7.7520
3.6592
.5718~~5~~
8593

2.1347
2.1347
1.6464
7.7721
36919

135

31400
4000
354000
4590

4970 ft lbs

7.2 per H.P.

~~32~~) 200 / 142 (6.2
0080

254
6.2
508
1524
157.48

~~6169~~

314
40
2 | 354
177

33
32
3 | 65
21

200
200
3 | 400
133

16

4970 ft lbs

Emf 235 — 235
Res ~~37600~~ — 314.00 + 2500 / 2000
Bat 32 — 32
Cand 48
little Bene
33 ~~44~~ ohms

1370
169 Res

Emf 200 — 200
Bat 33 — 32
Res 31400 + 4000 / 2000
Cand 16

354
177

Flat

end of the first Col of Lamps

177 158
4
1239
157
1099
177
785
1593
157
27649
443
23947
98596
98596
109195.07

3
177
2

177 ) 109195.07 ( 6169
106244
299
177
1225
1062
1630

2.1523
2.1523
1.6464
7.7471

3.6981

4994

218
218
3 | 436
145

31400
4500
200 | 35900
179

8153
2095
6946

7194

2806

191

962 2.2095
2.2095
1.6444

202 7.6946

3.7600

5760

---

No 17

Cand 16
Exit ~~218~~ – 218
Res 37650 + 3000 / 200
Batt 32 – 32

Ollt 2~~4~~2 + 247
Res 31400 + 4500 / 200
142 ~~1340~~
~~134~~
179 Res
Givd 48
Bat 32 – 32
27 ~~40~~ ohms

1.8)2420 (134
18
62
54
80

31400
4500
20)35900 (179
20
159
140
190
180

3 | 324
1.08

3 | 424
141

212
212
3 | 424
1420

37650
1000
1420 ) 38650 ( 193
186
180
65

3 | 212
70

1.18
32
236
354
37.76

2.1553
2.1553
1.6464
7.6904
3.5474

4440 ft. lbs

37650
3300
3.7 — 41095 — 28
205

21.6 ) 38.8
1640
1520

140
16520

21.6
1.8
1728
216
36.72

4

21.6
1.8
1728
216
38.88

1.8 ) 21.20 ( 12
18
32
41

243
245
3 | 488
162 163

| | | |
|---|---|---|
| EM7 | 212 - 212 | ~~1350~~ |
| Res | 37650 + 10000 | 190 ohms |
| Bat | 32. — $\frac{2000}{32}$ | |
| Cond | 16 | 1430 |
| EM7 | 243 _ 245 | ~~1350~~<br>204 ohms |
| Res | 37650 + 3300 | |
| Bat | 32 - $\frac{2000}{32}$ | ~~43~~ ohms<br>29 |
| Cond | 48 | |

37650
1000
38650

Up to this Camp they were all tested with the old battery the 32 def is to be multiplied by 1.18

32

2.1644
2.1644
1.6464
7.7471
3.7223

5280

---

19 Sept 30th

E.M.F. ~~205 – 205~~ 185 – 185
Res 37650 + ~~1500~~ / 200
Bat 32 – 33
C 16

188 Res
1230
~~46~~ ohms

EMF 219 – 219
Res 31400 + 4500 / 2000
Bat 32 – 32
Cur 48

6½
122
1460
179R
22 ohms

20) 37650 (188
2000
176
160
165
160

2.1875
2.1875
7.6968
1.6464
3.7182 5230

2.1239
2.1239

200
198
2|398
199

37650
4900
42550 /212
40XXX
255
2800
560
495

| | | |
|---|---|---|
| Em | 232 – 232 | 201 Res<br>154 |
| Res | $\frac{37650 + 2700}{200}$ | 13 Res |
| Can | 48 | |
| Bat | 32 – 33 | TEE. |
| Aust | 200 – 198 | 200<br>198<br>398<br>132 |
| Res | $\frac{37650 + 4900}{200}$ | 376.5<br>49<br>4255<br>212 |
| C | 16 | |
| Bat | 33 – 32 | |

Stop for to tend some [illegible].

37650
2700
40350

37650
2700
20)40350(201
3|232
77
154
3|464
154

21

| | | |
|---|---|---|
| 2167 | 260 — | to high |
| Bat | 32 — 32 | |
| Res | $\frac{37600 + 120000 + X}{200}$ | |
| Can | 16 | 4 cal |

This is all I could get on it. On one of its clamps there was that peculiar phosphorescence.

---

260 .2
3)520
173 v

2,1461
2,1461
1,6464
7.7747

3.7133   5170

210
213
3 | 423
141

31400
2300
2000 | 33700
168

179
182
3 | 361
120

22

| | |
|---|---|
| C | 48 |
| Res | $\frac{31400 + 2300}{2000}$ |
| E. Wt | 210 — 213 |
| Bat | 32 — 33 |
| | Blue |

1400
168 Res

28 R

| | |
|---|---|
| C | 16 |
| E77 | 179 — 182 |
| Res | $\frac{31400 + 4600}{2000}$ |
| Bat | 31 — 33 |

31400
2300
20 ) 33700 (168
20
137
120
170
160

3 | 212
70
140

2.1461
2.1461
1.1646
7.7645

3.7031 5050

23

E.7M 210 — 214 1400
172 Res

Res $\frac{31400 + 3100}{2000}$

Bat 30.5, 33 29 Res

@ 48

EM7 180 —

Res $\frac{31400 + 45000}{2000}$

Bat 30.5 — 33

@ 16

31400
3100
20)34500 172 Res
1,45

3)212
70
2
140

2.2041
2.2041
1.6464
7.6216
3.6762

4750 ft. lbs

---

24

C 48
EMF 240. 243
Res $\frac{37650+10200}{200}$
Bat 30.5. 33 Blue

1600
239 Res
5(others)

EMF 200 —
Res $\frac{37650+12000}{200}$
Bat
C 16

$\frac{80 \times 2}{160}$

37650
10200
20)47850 (239
40
78
60
185

2,1523
2.1523
1,6464
7.8013
3.7523 5650

182
183
3 | 365
122

314
45
5 | 359
179 - 180

EMF 215 - 214 142 v
158 Res
Res $\frac{31400 + 300}{200}$
Bat 30 - 33 24 Res
C 48
Sute [illegible]

Res $\frac{31400 + 4500}{200}$
314
45
359
179.5
C 1.6
Curt 182 - 183
182
183
365
122 volts
Bat 30 - 33

31400
300
20 | 31700 (158.
20
117
100
170
71
2
142

2.1875
2.1875
116464
7.7190
3.7404

37650
6200
2000 ) 43850 ( 269
4000
138
120
185

198
198
3 | 39.6
132

C 48 154.0
R $\frac{37650 + 700}{2000}$ 191 Res
5500 ft. lbs.
EMF 232 – 232 12 ohms
Bat 33 – 30
Blue and mercury in glob

C 16
R $\frac{37650 + 6200}{2000}$
EMF 198 – 198
Ba 34 – 30

37650
6200
43850
21.925

198
198
3 | 396
132

37650
700
20) 38350 (191.
20
183
180
35

3 | 232
77
154

27

had a very bad spell and gave away at about one oclock,

28

a very bad spot on the top of the loop. gave away ~~[illegible]~~ some Hg was in the glob

TAE

2.1523
2.1523
1.16464
7.7747

3.7257

5320

---

C 48

1420
168 R

Res $\frac{3.1400 + 2300}{200}$

E M F 212 — 213

26 ohms

Bat 33 — 32

---

E M F 180 — 180

314
40
354
177

Res $\frac{31400 + 4000}{200}$

C 16

180
180
360
120

Bat 305 — 33

31400
2300
20) 33700 (168.
20
137
120
170

7½
142

2.1523
2.1523
1.6464
7.8013
3.7523    5658

| | | |
|---|---|---|
| Rs | 31400 + 200 | 142 v |
| E.M.F. | 213 200 212 | 158 Rs |
| C | 48 | 24 ohms |
| Bat | 31 — 32<br>Rl at one of the clamps | |
| C | 16 | |
| E.M.F. | 190 — 190    TKE | 190<br>2<br>380<br>1266 |
| Rs | 31400 + 1700 | 310<br>7 |
| Bat | 33 200 | 331<br>165.5 |

31400
200
20)31600(158
20
116
100
10

3)212
71
142

2.1875
2,1875
1,6464
7.6757
3.6971 4980

232
.234
3 | 466
1553

3765
690
20 | 4455
40
45
45
228

| | | |
|---|---|---|
| Res | $\frac{37650 + 4700}{200}$ | 1540<br>211 R |
| EMF | 232 — 234 | |
| Bat | 32 - 30,5 | 13 ohms |
| C | 48 Blue in clamps | |
| C | 16 | |
| Res | $\frac{37650 + 6900}{200}$ | 376.<br>64<br>445<br>222 |
| Bat | 32 — 32 | |
| EMF | 215 - 215 | 215<br>215<br>430<br>143 |

TRE

37650
4700
20 | 42350 (211 R
40
23
20
3 | 233
77
154

2.2041
2.2041
1.6464
7.7077
3.7623

5780 ft. lbs

---

32

| | | |
|---|---|---|
| Res | $\frac{37650 + 1600}{200}$ | 1600 |
| EMF | 240 – 241 | 196 Res |
| C | 48 | 4 ohms |
| Bat | 32 – 33 Blue in Clamp | |
| Res | $\frac{37650 + 3500}{200}$ | 376.<br>35<br>411<br>205 |
| Emf | 210 – 212 [illegible] | 210<br>212<br>422<br>141 |
| C | 16 | |
| Bat | 32 – 33 Blue in Clamp | |

37650
1600
20) 39250 (196.
20
192
180
120
120

80
2
160

2.2095
2.2095
1.6464
7.6326
3.6980 4990

37650
1190
2 | 358 40
194

201
206
3 | 407
1-35-136

---

| | | |
|---|---|---|
| Rio | $\frac{37650 + 9000}{200}$ | 233 Rs<br>162 v |
| C | 48 | |
| E.M.T. | 240 – 247 | 2 (cheap) |
| C | 16 | 3765<br>11.9<br>3884<br>1942 |
| Rut | $\frac{37650 + 11900}{200}$ | |
| E.M.T. | 201 – 206 | 206<br>201<br>407<br>136 |

37650
9000
20 | 46650 (233
40
66
60
6

40
47
2 | 84
43

243
81
162

2·1703
2·1703
1·6464
7·7235
3·7105

5130

189
190
979
3 | 126

37650
1700
200 | 39350 | 196
20
193
180
135
120
15

Res $\dfrac{37650 + 300}{2000}$ 1480
189 Res

EMF 220 – 224

20 ohms

C 48

C 16

Res $\dfrac{37650 + 1700}{2000}$

EMF 189 – 190

37650
300
20) 37950 (189
20
179
160
195
180
5

3) 222
74
148

2.2148
2.2148
1.6464
7.6517
3.7277

5340

232
239
471
157

37650
6800
44450
232

| | | |
|---|---|---|
| Res | $\frac{37650 + 7000}{200}$ | 164 C<br>223 Res |
| C | 27 | Nothing |
| E.M.F. | 245 — 251<br>Blue at clamps Hg in globe | |
| Em.F. | 232 — 239. | |
| Res | $\frac{37650 + 8800}{2000}$ | |
| C | 16 | |

37650
7000
20)44650 (223
40
46
40
65

45
51
2)96
48

3 (248
82
164

2.1584
2.1584
1.1646 4
7.7375
3.7007

5020

aten
143 2.1553
2.1553
1.6464
182 7.7399
3.6969

4970

8153
1553
7399
7105

2895

195
182
713

No 36

Res $\frac{314000 + 53000}{2000}$ 0144 Res 183
Ent 213 – 217
© 48 Blue in glob 32 Res

Res $\frac{314000 + 70000}{2000}$
Ent 172 – 179 KRG
© 16

314000
53000
2) 367000 (183 Res
2
16
16
70

213
217
2) 430
3) 215
72
2
144

3)224
74
148

31400
57000
20)37400(185
26
126
110

2.1703
2.1703
1.6664
7.7328
7.7198

5250 H. M.

---

37

| | | |
|---|---|---|
| Res | $\frac{31400 + 5700}{2000}$ | 1480<br>185 Res |
| C | 48 | |
| EMF | 222 - 226 | 20 ohms |
| | ~~Blue~~ Blue at the clamp | |
| EMF | 193 - 195 | |
| Res | $\frac{37650 + 6000}{2000}$ | |
| C | 16 | |

31400
4000
200) 35400
177

31400
5100
200) 36500
182

2.1072
2.1072
1.6464
7.7520
3.6128    ~~4100~~

2.1139
2.1139
1.6464
7.7520
6262    4230

---

38

Res $\frac{31400 + 4000}{2000}$ = 177 ohms

Emf 193 – 198

C 48    ~~98 ohms~~ 49 ohms

193
148
2)391
3)185
61 V
2
122

3)194
64
128

Emf 182 – 179

Res $\frac{31400 + 5100}{200}$ = 182 ohms

C 1.6    9.4 Per[illegible]

182
179
2)361
180
60
2
120 V

182
4
728    3

1200
120
2400
120
14400
443
43200
57600
5760

182) 63792.0.0 (3505.
546
919
918
0920

182) 919 (6
42 54.
4

30

3505) 33000 (9.4
31545
14550
14020

9.4 Per

31400
3000
200) 34400
172

31400
3900
200) 35300 (
176

227
231
2) 458
3) 229
76
2
152
152
304
760
152
23104
443
69312
92416
92416
172) 102350.72 (5950.
860
1635
1548
870
860

3) 228
76
2
172
9
76
1548

595
4
2380

595
2975

5950) 33000 (5.5
2975
3250

Res 31400 + 3000 / 200 = 172 ohms

17

EMF 227 — 231 5.5 per HP

75

C 48 1520

TAG 172 ohms

Blue in globe and Hg in also 13 ohms

---

Res 31400 + 3900 / 200 = 176 ohms

C 16

E.M.F. 203 — 207

Blue at clamp.

---

Bat 31 — 33

2) 205
68
136

136
136
816
408
136
18496
44.3
55488

31400
1300
20 | 32700 (163
127
120
70
60

2
3 | 203
67
134

2.1271
2.1271
1.6464
7.7877
3.6883    4880

129    2 1106
2 1106
166    1.6464
7.8069
3.6745

4720

8153
1106
8069
7328
2672

185
156
+ 29

40 Oct. 1. 80

| | | |
|---|---|---|
| Res | $\frac{31400 + 1300}{200}$ | 1340<br>163 Res |
| EMF | 203 — 204 | |
| C | 48    149 | 36 ohms |
| Bat | 321.5 - 325 | |
| C | 116 | |
| Res | $\frac{31400 + 2700}{200}$ | |
| EMF | 170 - 169 | |

37650
4100
20)41750 (208 Res

3)224
74
148

2.1703
2.1703
1.6464
7.6819
3.6689 4660

41

C 48

1480
208 Res

Res $\frac{37650+4100}{200}$

E.M.T 224 _ 223

22 Res

Blue

Res $\frac{37650+6700}{200}$

C 16

E.M.T. 194 − 193

3 | 223

74
2

148

37650
800

20) 38450 (192
20
184
180

2.1614
2.1614
1.6464
7.7167

3.6859

4850

42

Res $\frac{37650+800}{200}$ 1480
192 Res

Ent 223 − 222 20 Res
C 48

EnT 190 − 189
Res $\frac{37650+2900}{200}$
C 16

3/.209
69
2
1380

31400
2900
20)3430(171
20
143
140
0

2.1399
2.1399
1.6464
7.767~~0~~
3.6932

4930

150
2.1761
2.1761
1.6464
7.7496
178
3.7482

5600

8.153
1761
.7496
7410
2590

+1

179
1~~7~~8

43

Hg in glob

1380
171 Res

EMT 209 — 209

32 Res

R $\frac{31400 + 2900}{200}$

TKE

C 48

C 16

EMT 150 - 179

R $\frac{31400 + 4700}{200}$

2
3) 234
78
2
156

37650
2900
70) 40550 (202
5

2.1931
2.1931
1.6464
7.6946
3.7272 5340

44

| | |
|---|---|
| C | 48 Res 202<br>v 156 |
| EM | 7 234 – 235 9 ohm |
| Res | 37650 + 2900<br>200 Blue at Clamp |
| C | 16 TAE |
| Res | 37650 + 5800 |
| EM7 | 208 – 207 |

37650
4900
20) 42550 (212 R
40
25
25
55

3 (213
71
144

2.1584
2.1584
1.6464
7.6737
3.6369   4320

160 2.2041
2.2041
1.6464
2.147.6696
3.7242

5300

8453
2041
6656
6896

3110

45

Res $\frac{37650 + 4900}{1000}$

Res 212
v 144
29 Res

Emt 213 — 1213

C 48

C 16

Emt 182 — 183

R $\frac{31400 + 7900}{200}$

$$\begin{array}{r} 71 \\ \underline{2} \\ 142 \end{array}$$ ✓

$$\begin{array}{r} 31400 \\ \underline{4000} \\ 20\overline{)35400} \end{array} \;(177$$

177)893260 (5046 ~~54~~

885

826

708

1180

1180.

$$\begin{array}{r} 177 \\ \underline{4} \\ 708 \end{array}$$

$$\begin{array}{r} 177 \\ \underline{5} \\ 885 \end{array}$$

$$\begin{array}{r} 177 \\ \underline{6} \\ 1062 \end{array}$$

3/180

60

120 ✓

160)637920 (3987

480

157

144

139

128

11 1/2

$$\begin{array}{r} 16 \\ \underline{8} \\ 128 \end{array}$$

$$\begin{array}{r} 16 \\ \underline{9} \\ 144 \end{array}$$

$$\begin{array}{r} 16 \\ \underline{9} \\ 144 \end{array}$$

46

EMF 213 — 212

Res $\frac{31400 + 4000}{200}$

C 48

1420 V

177 R

5046 ft lbs

280 ohms

---

C 16 . [illegible]

EMF 180 — 1874

Res $\frac{31400 + 6000}{200}$

120 V

160 Res

3987 ft lbs

---

$$\begin{array}{r} 31400 \\ \underline{6000} \\ 20\overline{)32000} \\ \underline{20} \\ 120 \\ \underline{120} \end{array} \;(160 \text{ R}$$

31400
28000
20)34200(171
20
142
140
20

3)211
70
140 ✓

171
1368

171)868280(5077
855
1328
1197
1310

171
855 176

171
1368 5

3)180
60
2
120 ✓

180
4
720

31400
4700
20)36100(180
20
161
160
10

180)637920(8544
560
0779
900
792
720
720

180
60

135 21303
21303
1.6064
166 7.7799
3.6869
4660

188
166
22 +

815.3
130.3
7799
7155
2745

47

Ro $\frac{31400+28000}{200}$ Res 171
v 140
ftlbs 5077

c 48

Ent 211 – 212 TAE 29R

c 16 120 v
180 R
3544 ftlbs

Ent 180 – 179

R $\frac{31400+4700}{200}$

3/214
71
2
1420

163
6
984

16 163
9
67

31400
1200
20)32600(163
2
126
120
60

163)893240(5480
815
782
652
1306
1304
2

3/179
60
2
1200

168
4
672

168
8
1176

168
8
1344
126

168)637920(3797
504
1339
1176
1632
1512
1200

48

Emt 214 – 213
Res $\frac{31400 + 1200}{200}$
Can 48 TaE 25 R

1420
163 Res
5480 ft lbs

Emt 179 – 180
C 16
Res $\frac{31400 + 2300}{200}$

1200
Res 168
3797 ft lbs

31400
2300
20)33700(168
23
137
120
170

3/261
87
2
174 V

37650
5000
20)42650 (2.13
40
26

213)13412 30 (6296
1276

632
426510
2062
1917
1460
1278

2.2405
2.2405
1.6464
7.6716
3.7996 6300

3/229
76
2
152 V)1023500

232)1023500 (4411.
928
0955
928
270
232
380

49

EMF 260—262

R. $\frac{37650 + 5000}{200}$

C 48 Blue at Clamp

174 V
213 Rs
6296 ft lbs

nothing

Rs $\frac{37650 + 8800}{200}$

Emf 2~~28~~—230 [illegible]

C 16

152 V
232 R
4411 ft lbs

37650
8800
20)46450 (2.3
40
64
60
45

3|237
79
158

37650
3700
20)41350(206
135

206)1105950(5457
1012
137
824
1152
1012
1420
1442

3|213
71
142 V

37650
5000
20)426,50(2
4
26
65

213)893260(4193
852
412
213
1996
1917
790

50

EMF 237 – 238
R. (37650 + 3700) / 200
C 45 Blue at Clamp

158 V
206 R
5457 ft lbs
7 ohms

C 16
TKG
Emf 213 – 214
Res (37650 + 5000) / 200

142 V
213 Res
4193. ft lbs

3)219
73
2
1460

31400
4600
20)36000
1800

944300

3)189
63
2
126

161
644

37650
800
20)38450 (192
20
122
120
20

192
8
1288

192)703310 (436
644
593
483
1101
966
1350
1266
62

51

Emf 219 — 220
1460
180 Res
5246 ft lbs

Res 31400 + 4600
200
22R

@ 48 4½

Emf 189 – 190
1260
192 Res

Res 37650 + 800
200
3663 ft lbs

@ 16

5 2

~~Em7 221 - 222~~

~~R 31400 + 3700~~

~~2000~~

~~e 48~~

~~E. M7 189 - 192~~

~~Res. 31400 + 5900~~

~~2000~~

~~e 16~~

3)254
84
2
1680
192) 1251210

31400
7100
20) 38500(192
20
185
180
50

3)230
77
2
1540

200)1050624(5253
100
58
100
60
60
2

5 2

EmF 254 - 255 1680
192 Res
Res $\frac{31400 + 7100}{200}$ 6516 ft lbs
C 48 Blue at clamp mottling

EmF 2305 230 Tk 1540
200 Res
Res $\frac{31400 + 8700}{200}$ 5253 ft lbs
C 16 Blue at Clamp.

31400
8700
20) 40100
200

19

3/229
76
2
1520

31400
5000
20/36400 (182
20
164
160
40

1023500

1.9
1

2.1818
2.1818
1.6464
7.7399
37499 5700

3/193
64
2
1280

10
6 10
192 192) 73580 (3780 88
768 576
1498
1344
154
1536
5

37650
900
20)38550 (192
20
185
180
55

193
7
1344

53 TK

E.M.F. 229 — 230.5 1520
182 Res
5623 ft lbs

Res $\frac{31400 + 5000}{200}$ 14 ohms

C. 48

Hg in this globe

C 16 1280
192 Res
3780 ft lbs

Res. $\frac{37650 + 900}{200}$

E.M.F. 192–195

$$\frac{3/285}{9}$$

---

54 T.R.

C 38 to light Res

~~Rest~~ $\frac{37650+120000+x}{200}$

E.M7 285 — 286

---

EM7 256 — 258

C 16

R ~~38~~- $\frac{3765+120000+x}{200}$

82
2
1640

37650
2000
20) 39650 (19
20
196
180
165
160

198) 1191480

3/215
72
2
1440

37650
3600
20) 41250 (20
40
125
120

206) 916000 (4459
824
946
824
1220
1030
1900

55 [illegible]

| | | |
|---|---|---|
| C | 48 | 0164<br>Res 198 |
| E.M.f. | 247 – 249 | ft lbs 6017 |
| R | 37650 + 2000 / 200 | nothing<br>[illegible] |
| E.M.f. | 214 – 216 | 1440<br>206 Res |
| R | 37650 + 3600 / 200 | 4459 ft lbs |
| C | 16 | |

$$\begin{array}{r} 80 \\ 2 \\ \hline 160\text{V} \end{array}$$

$201)\ 1134080$

$$\begin{array}{r} 37650 \\ 2600 \\ \hline 20)\ 40250 \\ \hline 201 \end{array}$$

$$\begin{array}{r} 70 \\ 2 \\ \hline 140\text{V} \end{array}$$

$212)\ 868280$

$$\begin{array}{r} 37650 \\ 4800 \\ \hline 20)\ 43450\ (212 \\ 38 \\ 45 \end{array}$$

56 Tele

| | |
|---|---|
| E.M.F. | 240 — 242 |
| R | $\frac{37650 + 2600}{500}$ |
| C | 48 |

1600V
Res 201
ftlbs 5642

5 ohms

little Blue

| | |
|---|---|
| E.M.F. | 244.5 – 209 |
| R | $\frac{37650 + 4800}{200}$ |
| C | 16 |

V140
Res 212
ftlbs 4095

3)246
82
164

20)3765~~0~~ 176
188 ohms

188)1191480 (

---

200R.

76
2
140

20~~0~~)86828~~0~~ (4341
80
68
60
82
80
28

| | | |
|---|---|---|
| Em 7 | 244 - 248 | 164 v<br>Res 188<br>ft lbs 6348 |
| R | $\frac{37650}{200}$ | Nothing |
| C | 48 | Blue at Clamps |
| Em 7 | 210 — 211 | |
| Res | $\frac{37650 + 2400}{200}$ | |
| Cl | 16 | |

37650
2400
20)4005~~0~~ (2000
40
005

140 v
200 Res
ft lbs 4341

5 8

Hg in this globe
when Current was
put it went up, there
must have been a
very bad vacuum

5

74
2
1480

37650
1300
20)38950(194
189
180
95

970350

2
62 2202
67

67
2
1340

37650
3500
20)41150(205

795450

---

59

Hg in This glob 1480'

e.m.f. 222 — Res 194 ftlbs 5001

Res $\frac{37650 + 1300}{200}$ 20 ohms

46 Blue at clamp

Emf 201 — 204 1340 Res 205

R $\frac{37650 - 3500}{200}$ ftlbs 3880.

C 16

83
2
1660

37650
5200
20)42850(214

214)1221170(5706
1070
1511
1498
1370

229
4

3/209
69
2
1380

37650
8200
20)45850(229

229)843650(3683
687
1566
1374
1925
1832
730

60 Oct 2 1880

| | |
|---|---|
| E.Mf | 249 — 250 ○166 Res 214 ftlbs 5706 |
| Res | $\frac{37650 + 5200}{20}$ nothing |
| C | 48 Blue in Clamp |
| E.Mf | 208 — 210 ○138 Res 229 ftlbs 3683 |
| Res | 37650 + 8200 |
| C | 16 |

2

78
2
156

179
6
1074

31400
4400
2435800 (179
20
158
179)1078090 (6022
1074
180
18

409
358
25
510
537

3(205
68
2
136 ✓

194 : 819370
46

314~~00~~
[illegible]
20)[illegible] Res

180 2
180

199) 819370 (4289 $\frac{191}{573}$
764
553
382
1710
1717

31400
69000
20)38200 191

1526
1890
1.719

191 7
8
1528
191
9
1719

61 Feby

EMF 236 - 237 v 156
Res 179
ft lbs 6022

R $\frac{31400 + 4400}{200}$ 15R

C 48 Blue at Clamp

C 16 v 136
Res 191
EMF 204 - 206 ft lbs 4289

R $\frac{31400 + 6900}{200}$ Blue at Clamp

79
2
~~15~~8 U

1105950

37650
4900
20) 42550 (2127
40
25
20
55

212) 1105950 (5216
1060
459
424
355
212
1430
1272

222
226
1332
444
444
49284

223) 970350 (4351
892
783
669
1145
1115
300

74
148 U

37650
7000
20) 44650 (2232 R
40
46
40
65
60
5

62

Oct 2 1886
TAS

C 86 U 158

Res 212

Res $\frac{37650 + 4}{2000}$ ~~ff lbs~~ 5216

8 ohms

EMF 239 – 240

Bat 33 — 31.5 Blue at clamps

EMF 222.5 – 226

148 U
223 Res
4351 ff lbs

Res $\frac{37650 + 7000}{2000}$ ~~4166~~

C 16 Blue at clamp

71 2 142 ✓

181 5 05

181 9 1629

31400 4900

20)36300 (181

20 163 160 3

181 4 24

181)893260 (4935

724 1692 1629

636 543

930 905

179 182

2)361 180

189 56

37650 300

20)37950 (189

60 2 120 ✓

189 5 32

189)637920 (3375 3

567 ~~610~~ 709 567 1422 1323 990 945

178 15

~~62~~ same lamp as No 9

E.M.F. 212 — 212 ✓142

Res 181

ft 4935

Res 31400 + 4900

200

28R

C 48

E.M.F. 179 — 182 120 ✓

Res 189

Res 37650 + 300 ft lbs 3375

C 16

$$3\,)\,225$$

$$\begin{array}{r} 75 \\ 2 \\ \hline 150 \end{array}$$

$$\begin{array}{r} 37650 \\ 600 \\ \hline 20)\,38250\,(191 \\ 20 \\ \hline 183 \\ 180 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 191 \\ 7 \\ \hline 37 \end{array} \quad 3 \quad \begin{array}{r} 191 \\ 8 \\ \hline 1528 \end{array}$$

$$\begin{array}{r} 191)\,996750\,(5218 \\ 955 \\ \hline 417 \\ 382 \\ \hline 355 \\ 191 \\ \hline 1640 \\ 1528 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 62 \\ 2 \\ \hline 124 \end{array} \checkmark$$

$$\begin{array}{r} 205)\,681160\,(3322 \\ 615 \\ \hline 661 \\ 615 \\ \hline 466 \\ 410 \\ \hline 560 \end{array}$$

$$\begin{array}{r} 37650 \\ 3500 \\ \hline 20)\,41150\,(205 \\ 40 \\ \hline 115 \end{array}$$

63 Tuly

| | | |
|---|---|---|
| Em7 | 224 — 226 | 150 v |
| Res | $\frac{37650 + 6000}{2000}$ | Res 191<br>lbs 5218 |
| e | 48 | 17 R |
| Em7 | ~~185~~ 188 — 187 | 124 v<br>205 Res<br>3322 lbs |
| e | 16 | |
| Res | $\frac{37650 + 3500}{2000}$ | |

241

37650
9000
20) 46650 (233
40
66
60
65

80
2
160

233
8
1864
2097

233) 1134080 (4867
932
2020
1864
1568
1398
1700
1631

233
6
1398

3/225
75
2
150 ✓

37650
9700
20) 47350 (236
~~2~~436

236) 996750 (22
872
1247
877

236) 996750 (4223.
944
527
472
555
472
830
708

Res 37650 + 9000 / 2000 ... 160
Res 233
Ent. 240 – 242 ft lbs 4867
nothing.
C 24. Blue in Clamps

---

Ent 224 — 226 ... 150
Res 236
Res 37650 + 9700 / 2000 ft lbs 4223.
C 16 Blue in clamps

214
71
142 143
168
504
31400
22000
20)33600 (168 R
20
136
120
160
160
162
168)893260 (5317
840
532
504
286
168
1180
1176
168
7
1176
57
2
114 V
31400
42000
20)35600 (178
20
156
140
160
160)575720 (3
480
957
178)575720 (3234.
534
417
356
612
534
780
712
534
178
12
2

65

Res 210 – 213 v 142
Res 168
ft 5317

Ew7 $\frac{31400 + 22000}{2000}$ 25 R

© 48 Blue in globe

Elist 172 – 172 v 114
R 178

Rest $\frac{31400 + 42}{200}$ ~~oft lb~~ 3234.

© 16

198
9
1782

198R 37650
2000
20) 39650 (198
20
196
180
160
160

198) 1078090 (5448
990
888
792
969
792
1770
1564

233
237
2)469
3)234
78
2
156 ✓

(211

70
2
140 ✓

37650
4900
20)42550
212 Res

R
212) 868200 |4095.
848
2028
1908
1200

64 [illegible]

|  |  |  |
|---|---|---|
| C | 48 | ✓156 |
| Res | $\frac{37650 + 2000}{200}$ | Res 198<br>ft lbs 5448. |
| EMF | 232—237 | 10R |
|  | Blue in Clamps |  |
| EMF | 210 - 212 | ✓140 |
| C | 16 | Res 212 weights at 16C<br>ft lbs 4095. |
| Re | $\frac{37650 + 4900}{200}$ | Blue in Clamp |

3 | 228

76
2
152 ✓

37650
3800
20 | 41450

207) 1023500 (4944
828
1955
1863
920
828

2 | 188
63
2
126 ✓

126
7
882

126
8
1008

4920

~~126 | 703310 (5581~~
~~630744~~

723
630
1081
1008

37650
5800
20 | 43450
217

230

217) 703310 (3
4347
2693

217) 703340 (3241
651
523
434
898
868

230

67 Tak

| | |
|---|---|
| E. M7 | 223 – 225   v 152 |
| Res | $\frac{37650 + 3800}{200}$ ofl lbs 4944.   Res 207 |
| C | 48   16 R |
| E. M7 | 184 – 187   v 126 |
| Res | $\frac{37650 + 5800}{200}$ ft lbs 3241.   Res 217 |
| C | 16 |

81
2
162 ʋ

37650
5800
20) 4345~~0~~

R 217) 1162610 (5357
1085
776
651
1250
1085
1650
1519

75
2
150 ʋ

223) 996750 (4469
892
1047
892
1555
1338
2170
2007

68 Tkg

Blue in Clampo

EM7 242 — 245 ʋ 162
Res 217
C 24 ftlbs 5357
Res $\frac{37650 + 5800}{200}$ 2 ohms

EM7 225 — 226 ʋ 150
Res 223
Res $\frac{37650 + 7000}{200}$ ftlbs 4469.
C 16

Blue in Clampo

37650
7000
20) 4465~~0~~
223 R

72
2
144 ✓

144
6
864

~~144) 918600 (6879~~
864
546
432
1140
1008
1320
1296

194
9
46

194
70

37650
1200
20) 38850 (194
20
188
180
88

194) 918600 (4735
776
1426
1358
680
582
980
970

61
2
122 ✓

208) 659360 (3121.
624
353
208
456
416
400

69 Tkg

| | |
|---|---|
| Em7. | ~~2215~~ 2 – 216   v 144<br>Res 194 |
| Res | $\frac{37650 + 1200}{200}$ 4735 ft lbs<br>26 R |
| C | 48 [illegible] |
| Em7 | 183 – 184   v 122<br>Res 208 |
| Res | $\frac{37650 + 4000}{200}$ ft. 3121 |
| C | 16 |

37650
4000
20) 41650 (2080
40
165
160

224
228
2452
3)226
75
2
150 √

37650
2600
20)40250(201
40

201)996750(4959
804
1927
1809
1185
1005
1800
1809

3)156
62
2
124 √

214)681468(3183.
642
381
214
1776
1712
640

70 TaE

E.M7 228 - 224
U 150
Res 201

Res $\frac{37650 + 2600}{200}$ Bbls 4959.

18 R

C 48

Blue in glob

Res $\frac{37650 + 5200}{200}$

Emt 187 - 185

C 16

37650
5200
20)42850(214
40
28

U 124
Res 214
Bbls 3183.

72
2
144

169
4
676 3

31400 169
2500 6
200)33900( 4 5
169 olms

169) 918600 (5435
845
736
676
600
507
930
845

0144
60
120

175
2
350

175) 637920 (3645 175
525 6
1129 1050 .3
1050
792
700
920
875
45

---

71 Tek

Emf 215 – 216 v 144
Res 169

Res $\frac{31400 + 2500}{200}$ ft lbs 5435

C 48 23R

E.M.F. 180 – 182 v 120
Res 175 olm

Res $\frac{31400 + 3700}{200}$ 3645 ft lbs

C 16

31400
3700
200)35100
175 Olms

75
2
15·0

37650
2500
20)40150(200
40

200)996750(4983.1
80
196
160
167
160
75

190
187
377
3|166
63
2
126

70

211)703310(3333.
633
703
633
701
633
680

72 Tel

ENT 226 – 225 v 150

Res 200

Res $\frac{37650 + 2500}{200}$ ftlbs 4983.

∴ 18 R

C 48 Blue in flat

ENT 190 – 187

C 16

Res $\frac{37650 + 4700}{200}$

37650
4700
20)42350(211
40
23
20
35

v 126

Res 211

ftlbs 3333.

8½
162

155
231
86

1162610
1155
00761
693
880

510
231)1162610 (5033
924
2386

194
1364

194
82 3

194
702

73
146

194
58

194
1258

194)944300 (4867
776
1683
1552
1310
1164
1460
1358
102

8½
16
73 Thk

EM7 243 1243
C 33
Res 36650 + 9700 / 200

v 162
Res 231
ft 5033
Nothing

EM7 219 − 21
Res 37650 + 12000 / 200
C 1.6

36650
9700
20)46350 (23175
40
63
60

v 146
Res 194
ft 4867.

37650
12000
20)38850 (194
20
188
180
85

2
3)233
77
2
154

37650
2500
20)40150(200
40
15

200)1050620(5253
100
50
40
106
100
62
60
2

3)195
65
2
130

211)748670(3547.
633
1155
1055
1007
844
1630
1477

154 : 164 :: 200 : 200+4
200
154)32800(212
308
200
154
460
62

74 Thé

Emt 233 – 233
v 154
Res 200
ftlbs 5253.
12R

Res 37650 + 2500
200

C 4 8
Blue in [illegible]

Emt 195 – 196

Res 37650 + 4700
200

C 16

v 130
Res 211

37650
4700
20)42350(21 ftlbs 3547,
4
28
35
150

~~68~~ 67
2
134

31400
1000
20) 32400 (
162

17956
44.8
162
58868
71824
71824
162) 795450.8 (4910.
64844
1474
1458
165
162
30

172
170
2040
3172
07
114

169) 575720 (3 169
648
127

169) 575720 (3405. 169 5
507
1014 4
687
676
1120
1014

142 2.1523
2.1523
1.6464
164 7.7852
3.7362

5450

8153
1523
7852
7528
2472

177
164
x13

75 [illegible]

Em7 200 – 200 1340
Res 162.
Res $\frac{31400 + 1000}{200}$ ftlbs 4910.
16
C 48 [illegible] 35 R

2/14 172. – 174
Res $\frac{31400 + 2000}{200}$
C 16C

31400
2500 0114
Res 169
20) 33900 ( ftlbs 3405.
169

134 : 164 :: 162 :: 162 + x
162
164
648
972
162
134) 26568 (197
134
1316
1192
3

197
162
35

226
228
2454
31227
75
150
150
7500
150
22500
443
67500
93000
900000
199)996750.0(5008. ft lbs
99954
1200
1592
108

199
4
995

1998
9
91

199
8
1592

37 191
63
2
126

15876
443
47628
63504
63504
215)7033960(32.71
645
583
430
1530
1505
256

76

Em7 226 − 228 = 150 V
Res 1999

Res $\frac{32000 + 36650}{200}$ ft lbs 5008.

Cam 48

14 R

32000
36650
20)39865 (199.
20
198
180
185
180

Em7 190 − 192

120 V
Res 215
ft lbs 3271

Res $\frac{5500 + 37650}{200}$

37650
5500
20)43150(2
40
35
115

C 16

150 : 1664 :: 199 − 199 + 4
164
796
1194
199
150)32636(213
300
203
150
536
450

213
199
14

Oct 4 1880

Note from Mr Batchelor

Received from factory

| | | | |
|---|---|---|---|
| Set 25 — | 2 | lamps | 2.1644 |
| 28 | 47 | .. | 2.1644 |
| 29 | 30 | .. | 1.6464 |
| 30 | 30 | .. | 7.7055 |
| | | | 3.6867 |
| Oct 4 | 30 | .. | |
| | 139 | lamps | 4800 |

all that could be counted up at this date was 134 lamps

JB.

20 more came up.

1461.1164 :: 197 : 197+x

164

788

1162

197

146)82308(221

292x

810

292

188

221

197

24

77 Oct 4 Tek

Bat 32 33 — 1460

EM 219 — 219 — 197 Res

Res $\frac{37650 + 1800}{2000}$ — 24 R

C 48 Blue in globe

EM7 187 — 187

Res $\frac{37650 + 4000}{2000}$

C 16

73

2

146

37650

1000

[illegible] 38650 (197

20

190

180

145

3)216
72
144

37650
600
20)38250 (191
20
182
182
25

2.1584
2.1584
116.464
7.7190
36822

4810

78

EM7 216 – 217
Res 37650 + 600
C 48

1440
191 Res
26 R

Little Blue

EM7 180 – 180
Res 37650 + 2300
200
C 16

144 1164 191 1914
164
764
1146
191
144)38324 (217
288
292
144
1080
1008
322

217
191
26

3 | 235
78
2
156

37650
4500
20 ) 42150 (10
40
21
20

2.1931
2.1931
1.6464
7.6776
3.7104

5.130

79 Tak

Ent 235 − 235 156 U.
210 Res

Res $\frac{37650 + 4500}{200}$ 10 R

C 48.

Ent 200 − 200

Res $\frac{37650 + 6900}{200}$

C 16

156 : 164 :: 210 : 210+2

164
210
1640
328
156 ) 34440 (220
312
324
312
120

220
210
10

72
2
144 v

31400
5000
20)36400(182
2
6
60
40

36

164 2.2148
182 2.2601
amp 144 7.8416
2.3165

207
182
25

2.1492
2.1492
11646
717399
3.6847

4840 [illegible]

Vo Rate

EMF 215 – 215

144 v
182 Res
18 ohms

Res $\frac{31400+5000}{2000}$

C 48

---

E.MF 176 – 176

Res $\frac{31400+7100}{2000}$

C 48

---

144 : 164 :: 132 : 132+x
132
164
528
792
132
144)21648(150
144
724
720
48

144
2
76

150
132
18

73
.2
146 v

37650
20000
20/39550 (C
20
196
180
16
16

2.1644
2,1644
1.6464
7.7053
3.6785

4770

81 Taz

EM7 218 – 218 146 v
Res 37650 + 20000 Res 198
2000 24 R
C 48

EM7 190 – 190
Res 37650 + 2900
2.00
C 16

146 : 164 :: 198 :: 198 + x
164
792
1188
198
146) 32472 (222
292
327
292
355
292

198
24

$$\frac{82 \times 2}{164}$$

3

82 TAE TAE

| | |
|---|---|
| | Hg in Thio glob— |
| Em-7 | 245 - 245 too high |
| Res | $\frac{37650 + 12000 + 4}{200}$ ○ |
| C | 65,25 inches |

| | |
|---|---|
| Em-7 | 217 - 217 |
| Res | $\frac{37650 + 12000 \times}{200}$ |
| C | 16 |

2)250
83
2
166

3

83 [illegible]

Blue on Clamp.
leaning on one side
to high

E.M7 250 − 250.

Res $\frac{37650+12000+x}{200}$

C 23.5

---

Em7 240 − 240

Res $\frac{37650+12000+6}{200}$

E 1.6

2

3)205

68

1365

314000

20000

20)33400 (167

20000

1340

1200

140

2.1335

2.1335

11646

7.7773

3.6907 4900

84

E.M.F. 208 — 208

Res $\dfrac{2000 + 31400}{200}$

C 48

1365

167 Res

34 R

Hg in glob and very blue

E.M.F. 172 — 172

Res $\dfrac{31400 + 3500}{200}$

C 16

136 : 164 :: 167 : 167 + 4

164

668

1002

167

136)27388 (201

272

188

201

167

.34

2

3)208
69
138 0

31400
2200
20)33600 168
20
136
120
160
160

2.1399
2.1399
1.6464
7.7747
3.7019

5030

85

ENA 208 - 208

Res $\frac{31400 + 2200}{200}$

C 48

1380
168 Res
31 ohms

ENF 175 - 175

Res $\frac{31400 + 3700}{200}$

C 16

138 : 164 :: 168 : 168 + x
164
672 4
1008
168
138) 27552 (199
138
1375
1242
~~179~~
1332
1242
.90

199
168
31

7

138
4
1242 3

7

3/207
69
2
138

2

31400
4400
20)35800
20
158
140
18

2.1399
2.1309
1.6464
7.7479
3.6741

4720

8153

155 2.1903
2.1903
1.6464
167 7.7282
3.7552

5690

86

EMJ 207-207

Res 31400 + 4400

200

C 48 bluem[illegible]

1380
179 Res
33R

EMJ 176—176

31400 + 6000

200

C 16

138 : 164 :: 179 : 179+X
164
716
1074
179
138)29356 (212
276
175
138
376
276

110
212
179
33

2

3|208
69
3
1380

314000
2800
20)34200 (171
34
142
140

2.1399
2.1399
1.16464
7.7670
3.6932

4980

171
164
684
1026
171
138)28044 (17
276
203

149 2.1732
2.1732
172 1.6464
7.7645
3.7573
5720

444
384
8153
1732
7645
7530
2470

203
171
32

177
172
+5

87

EM7 207 - 210

Res $\frac{31400 + 2800}{200}$

c 48.

Blue in the globe

1380
171 Res
~~172~~
32R

EM7 175 - 175

Res $\frac{31400 + 4300}{200}$

c 16

138 : 164 :: 171 : x + 171

164
684
826
171
138)26044 (188
138
1224
1104
1204
1104

138
6625

138
9
1242

188
171
17

2

3)206
68
2
1360

31400
5600
20)37000
185

2,1335
2,1335
1,6464
7,7328
3,6462 4430

152 2.1818
2.1818
1.6464
183 7.7375
3.7475

5590

+1

---

88.

Em7 205 -207

Res $\frac{31400+5600}{200}$

C 48 little Blu

1360
185 Res
.37R

Em7 170 -172

Res $\frac{31400+7300}{200}$.

C 16

136 : 164 :: 185 : x : 185
164
740
1110
185
138)3034 0
27
391
272
390
2

(222

222
185
37

3(212

77

142

37650

3100

20/00750

203

203)893260(4352

812

712

606

1066

1015

510

203

164

812

1218

203

142)33492(235

284

510

509

426

832

720

2 112

235

203

32

155 2.1903

2.1903

1.6464

208 7.6819

37089

5110

89

Em7 210 – 213

Res 37650 + 3100

200

e 48

1420

Res 203

4352

32

Em7 180 – 180

Res 37650 + 4700

200

e 16 e

142 | 164 | 203 $\frac{1}{4}$ 203+x

142

22

164

812

1218

203

142)43292(304

426

210

692

568

124

304

203

3 | 187

62

2

1245

31400

1500

20 | 32900 (164

20

128

120

9

164

164) 681162 (4153

656

251

164

876

820

560

492

141 2.1492

2.1492

1.6464

164 7.7852

3.7300

5370

8153

1492

7852

7497

2503

178

164

+14

90 Kee

Emt 187 — 187

Res $\frac{31400 + 1500}{2000}$

c 48

1240

164 Res

4153 ft Cbs

52 R

Emt 160 — 164

Res $\frac{31400 + 3000}{2000}$

c 16

216

164

52

124 : 164 :: 164 : x 164

124) 26896 (216

248

209

124

856

744

112

2

2

1

216

164

52

3)198
66
2
132

31400
66000
20)32000
160

16
4

16
6
6

168) 772026 (4825.
672
1320
1280
40
32
820
0

135.

143.7

6153
1303
8356
7812

2198

166
146
20
+

91

EMF 198 – 198

Res $\frac{31400 + 600}{2000}$

@ 48

1320
160 Res
4825 ffllcs

38 R

EMF 165 – 165

Res $\frac{31400 + 2100}{2000}$

@ 16

132 : 164 : 160 : x – 160

164
9840
164
132) 26240 (198
264
1304
1188
1160
1056

198
160
38

3/221
73
2
146

31400
4800
20)36000
180

180)944300(5246
900
443
366
830
720
1100
1080
20

180
6
80

153 2.1847
2.1847
1.6464
196 7.7077
3.7235

5290

Right

Oct 5 92

EWt 221 - 222
Res 31400 + 4600 / 200
C 48

1460
Res 180
lbs 5246

22 R

EWt 180 - 180
Res 31400 + 7000 / 2000
C 16

146 : 164 :: 180 : x 180
164
1180
13120
164
146)29520(202
292
320
292

480
22

3 | 230
~~9~~ 76
152

200 | 1023500
5011.7

152 : 164 :: 200 : 200+x

164

152) 32800 (215
3040
240
152
880

161 2.2068
2.2068
1.6464
7.6655
216 3.7255

5310

'93

Elev 230 − 230

Res $\frac{37650 + 2400}{200}$

C 48

1520
Res 200
5117

15R

Elev 200 − 200

Res $\frac{37650 + 5600}{200}$

C 16

37650
2400
20) 40050 (~~17~~2

215
200
15

199
180
195
200

.94 [illegible]

When put in there
was an are at the
clamps

3)211
72
140

43000
37400
20)37700

178)868280(4877
912
1562
1424
1388
1246
1420

178
200
5

178
1424
48

2.1461
2.1461
1.6464
7.7496
3.6882 4880

95 ~~Tke~~

1400
178 Res
4877 ftlbs

EMF 212-210

Res $\frac{43000 + 31400}{200}$ 30R

C 48

Dwt 980 - 180

Res $\frac{6300 + ~~431~~ 31400}{2000}$

C 16

140 : 164 :: 178 : x + 178
164
712
1068
178
140)29192(208
280
1192
1120

208
178
30

2)213

71

2

142

31400

5600

200)37000

185

185) 89326 0 (48~~25~~

740

1532

1480

526

370

1560

185

95

185

95

185 4

1480

96 GAE

E.M.F 212 — 215

1420

Rs 185

4828 ft lbs

Res $\frac{31400 + 5600}{200}$ 28R

C 48 [illegible]

E.M.F 180 — 172

Res $\frac{31400 + 7700}{200}$

C 16

2X3

185

28

142 : 164 :: 185 : X + 185

164

740

1110

185

142) 30340 (213

284

194

142

520

426

3(2 1 0

1 0

140

167
5
835

31400
2100

20)33500(171
20
135

167)868880(5199.150
835
332
167
1658
1503
1550

140

167
1503

97

EMH 208–212

Rs $\frac{31400 + 2100}{200}$

C 48

167 Rs
140 U
lbs 5199
R 28

GM 173–175

Rs $\frac{31400 + 3000}{200}$

C 16

140 : 164 :: 167 : x + 167
164
668
1002
167
140)27388(195
140
1338
1260
788

195
167
28

72
2
144

171
5
855

171) 9186 00 (5377
855
636
513
1230
1197
330
342

171
7
1197

138

190

Beneatel[illegible]p v 144
Reo 171
Alls 5371

| | |
|---|---|
| Em | 218 – 218 |
| Reg | 31400 + 2800 / 2000 |
| C | 48  23+171 |
| Em | 186 – 186 |
| e | 16 |
| Re | 31400 + 4800 / [illegible] |

144 : 164 :: 171 : x + 171
164
684
1026
171
144) 28044 (194.
144
1364
1296
680
576

144
8
1296

144
2
288
144

144
4
576

194
171
23

99

This Lamp was
bustid when I
received it.

Jim,

2 229
76
2
152 v

31400
9500
20)409000 (204

204)1023500 (5017. 20/10
1020
3500
204
1510
1428

b:c :: 204 : 204+x

b:c :: a : a+x

x+204

152 : 164 :: 204 : x+204

b:c-b :: a : x

100

Em 7 228–230 v152
Ro 204
Ro 31400 + 9500 flbs 5017.
e 48 2000 16+204

Em 200–200
Ro 31650 + 500
e 16

204

204
22
6

152 : 164 :: 204 : x+204
164
x16
1224
204
152)33456 (224
304
305
304
16

220
204

| | |
|---|---|
| 1 | 16 |
| 2 | 23 |
| 3 | 28 |
| 4 | 28 |
| 5 | 30 |
| 6 | 15 |
| 7 | 22 |
| 8 | 38 |
| ~~8~~ | ~~3~~ |
| 9 | 52 |
| 10 | 32 |
| 11 | 37 |
| 12 | 32 |
| 13 | 33 |
| 14 | 31 |
| 15 | 34 |
| 16 | 24 |
| 17 | 18 |
| 18 | 10 |
| 19 | 26 |
| 20 | 24 |
| 21 | 14 |
| 22 | 35 |
| 23 | 12 |
| 24 | 18 |
| 25 | 23 |
| 26 | 18 |
| 27 | 26 |
| 28 | 2 |
| 29 | 16 |
| 30 | 10 |
| 31 | 25 |
| 32 | 17 |
| 33 | 28 |
| 34 | 8 |
| 35 | 15 |
| 36 | 20 |
| 37× | 5 |
| 38 | 14 |
| 39 | 22 |
| 40 | 7 |
| 41 | 25 |
| 42 | 29 |
| 43 | 28 |
| 44 | 29 |
| 45 | 9 |
| 46 | 32 |
| 47 | 20 |
| 48 | 22 |
| 49 | 36 |
| 50 | 13 |
| 51 | 49 |
| 52 | 20 |
| 53 | 32 |
| 54 | 20 |
| 55× | 2 |
| 56× | 4 |
| 57 | 13 |
| 58 | 24 |
| 59 | 26 |
| 60 | 12 |
| 61 | 24 |
| 62 | 5 |
| 63 | 29 |
| 64 | 28 |
| 65 | 13 |
| 66 | 22 |
| 67 | 28 |
| 68 | 27 |
| 69 | 36 |
| 70 | 28 |
| 71 | 7 |
| 72 | 29 |
| 73 | 10 |
| 74 | 25 |
| 75 | 26 |
| 76 | 9 |
| 77 | 15 |
| 78 | 7 |
| 79 | 12 |
| 80 | 28 |
| 81 | 23 |
| 82 | 14 |
| 83 | 25<br>21 |
| 84 | |
| 85 | |
| 86 | |
| 87 | |

~~2939)3638(R~~

2939

3638)2939.0(.82

28504

8860

82 Webers

48 candles

| Volts | R |
|---|---|
| 147 | 188 |
| 143 | 172 |
| 152 | 188 |
| 137 | 154 |
| 140 | 167 |
| 154 | 195 |
| 158 | 188 |
| 156 | 180 |
| 156 | 182 |
| 143 | 178 |
| 143 | 177 |
| 156 | 209 |
| 141 | 183 |
| 146 | 177 |
| 137 | 169 |
| 142 | 179 |
| 143 | 204 |
| 146 | 179 |
| 154 | 201 |
| 140 | 168 |
| 2939 | 3638 |

1363 ) 9210 ( .67
8178
10320
9541

80
7
560 Webers
in [illegible]

.82
.97.0
574
738

.67 ) 79.54 ( 118 lamps of 16 candles through 1 brush
67
125
67
584

118 ) 800 ( 7 brushes to carry 800 lamps, the
826

16 Candles

| Volts | Ohms |
|---|---|
| 122 | 179.5 |
| 132 | 219.25 |
| 120 | 177 |
| 127 | 166 |
| 143 | 222 |
| 141 | 205 |
| 136 | 194 |
| 7 \| 921 | 1363 |

.67

80000
65.125
14.875

1.8137
1.8137
3.6274
2.3446
1.2828

1.1723
2
2.3446

19½
2d

Page
1
2 - 99 ✓
3 - 73 ✓
4 - 71 ✓
5 -
6 - 77 ✓
7 - 91 ✓
8 - 101 ✓
9 - 39 ✓
10 - 79 ✓
11
12 - 81 ✓
13 - 95 ✓
14 - 75 ✓
15 - 179 ✓
16 - 189 ✓
17
18 - 195 ✓
19 - 159 ✓
20 - 123 ✓
21 - 191 ✓
22 - 185 ✓
23
24 - 65 ✓
25 - 139 ✓
26 - 59 ✓
27
28 39
29

Page
30 - 125 ✓
31 - 147 ✓
32 - 63 ✓
33 - 93 ?
34 - 207 ✓
35 - 83 ✓
36
37 - 71 ✓
38 - 193 ✓
39 - 77 ✓
40
1 - 171 ✓
2 - 149 ✓
3
4 - 41 ✓
5
6 - 155 ✓
7
8
9 - 51 ✓
50 - 177 ✓
1 - 183 ✓
2 - 129 ✓
3 - 51 ✓
4 - 47 ✓
5 - 163 ✓
6 - 109 ✓
7 - 135 ✓
8 - 47 ✓
9 - 151 ✓
60 - 169 ✓
1 - 121 ✓
2 - 105 ✓
3 - 103 ✓
4 - 115 ✓

Page
65 - 175 ✓
6 39
7 - 111 ✓
8 - 57 ✓
9 - 67 ✓
70 - 127 ✓
1 - 179 ✓
2 - 87
3 - 41 ✓
4 - 141 ✓
5
6 - 107 ✓
7 - 145
8 - 133 ✓
9 - 119
80 - 209
1 - 197
2 - 97
3 - 143
4 - 173
5 - 201
4
- 57 ✓
- 165 ✓
- 201 ✓
8
9
100 - 137 ✓

|  | Before Ft lbs | After Ft lbs | Before Ohms | After Ohms |  |
|---|---|---|---|---|---|
| 1 | 5090 ✓ | 5460 | 188 | 159 | Pt |
| 5 | 5200 ✓ | 5080 | 167 | 166 | ~~Pt~~ |
| 17 | 4790 ✓ | 5760 | 179 | 202 |  |
| 36 | 5020 ✓ | 4970 | 183 | 182 | ~~Pt~~ |
| 40 | 4880 ✓ | 4720 | 163 | 156 | ~~Pt~~ |
| 43 | 4930 ✓ | 5600 | 171 | 178 |  |
| 45 | 4320 ✓ | 5300 | 212 | 214 |  |
| 47 | 5077 ✓ | 4860 | 171 | 166 | ~~Pt~~ |
| 75 | 4910 ✓ | 5450 | 162 | 164 |  |
| 86 | 4720 ✓ | 5690 | 179 | 187 |  |
| 87 | 4980 ✓ | 5720 | 171 | 172 |  |
| 88 | 4430 ✓ | 5590 | 185 | 183 |  |
| 89 | 4352 ✓ | 5110 | 203 | 208 |  |
| 90 | 4153 ✓ | 5370 | 164 | 164 |  |
| 91 | 4825 | 5530 | 160 | 145 | Pt |
| 92 | 5246 | 5290 | 180 | 196 | + |
| 93 | 5117 | 5310 | 200 | 216 |  |
| 98 | 5371 | 5820 | 171 | 190 |  |
|  | 18 \| 87411<br>4800 ft lbs before | 18 \| 96630<br>5368 ft lbs after | 178 | 180 |  |

Wenstrom clamps

Volt

91 ✓
98 ✓
36 ✓
17 ✓
43 ✓
47 ✓
40 ✓
45 ✓
1 ✓
75 ✓
5 ✓
92 ✓
90 ✓
89 ✓
93 ✓
88 ✓
87 ✓
86 ✓

1
5
17
36
40
43
45
47
75
86
87
88
89
90
91
92
93
98

|  |  |  |
|---|---|---|
| 1 | 147 | 140 |
| 5 | 140 | 138 |
| 17 | 142 | 162 |
| 36 | 144 | 143 |
| 40 | 134 | 129 |
| 43 | 148 | 150 |
| 45 | 144 | 160 |
| 47 | 140 | 135 |
| 75 | 134 | 142 |
| 86 | 138 | 155 |
| 87 | 138 | 149 |
| 88 | 136 | 152 |
| 89 | 142 | 155 |
| 90 | 124 | 141 |
| 91 | 132 | 135 |
| 92 | 146 | 153 |
| 93 | 152 | 161 |
| 98 | 144 | 158 |
|  | 18 \| 2525<br>140 average | 18 \| 2708<br>150 average |

2 above
16 Below

8d
.9

32 Pt Clamps

~~4 Broken~~

~~6 good~~ TAE

64 nickel

3 nickel for carbons

13 good

Dull red

30 Volts

37650
9
46650
233 Ohms

26 Volts just red

26 : 164 :: 260 : 1640

26 ; 164 !!

| X black<br>X red | X red<br>X black |
|---|---|
| ~~\|\|\|\|~~ | ~~\|\|\|\|~~ ~~\|\|\|\|~~ |
| | ~~\|\|\|\|~~ |
| \|\|\| | \|\|\| |
| 8 | 18 |
| ~~\|\|~~ ~~\|\|~~ | ~~\|\|\|\|~~ |
| ~~\|\|\|\|~~ | ~~\|\|\|\|~~\|~~\|\|~~\|\|\| \|\| |
| 10 | 24 |
| 1 | ~~\|\|\|\|~~ \|\|\| |

KE

Between 0 - 200 minutes

| Alks | |
|---|---|
| 4750 — 5000 | 10 |
| 5000 — 5250 | 3 |
| 5250 — 5500 | 5 |
| 5550 — 5750 | 2 |
| 5750 — 6000 | 5 |
| 6000 — 6250 | 0 |
| 6250 — 6500 | 1 |
| | 26 |

| Ohms | |
|---|---|
| 150 — 162.5 | 1 |
| 162.5 — 175 | 2 |
| 175 — 187.5 | 7 |
| 187.5 — 200 | 7 |
| 200 — 212.5 | 5 |
| 212.5 - 225 | 1 |
| 225 - 237.5 | 2 |
| 237.5 - 250 | 1 |
| | 26 |

Between 200 & 400 minutes

| Hlks | |
|---|---|
| 4500 – 4750 | 1 |
| 4750 – 5000 | 8 |
| 5000 – 5250 | 6 |
| 5250 – 5500 | 5 |
| 5500 – 5750 | 3 |
| 5750 – 6000 | 0 |
| 6000 – 6250 | 2 |
| 6250 – 6500 | 1 |
| 6500 6750 | 1 |

TKG

| Ohms | 27 |
|---|---|
| 150 – 162.5 | 2 |
| 162.5 – 175 | 5 |
| 175 – 187.5 | 6 |
| 187.5 – 200 | 7 |
| 200 – 212.5 | 6 |
| 212.5 – 225 | 1 |
| | 27 |

Arum 400 on

| | |
|---|---|
| 4000 – 4250 | 2 |
| 4250 – 4500 | 4 |
| 4500 – 4750 | 1 |
| 4750 – 5000 | 8 |
| 5000 – 5250 | 9 |
| 5250 – 5500 | 2 |
| 5500 – 5750 | 0 |
| 5750 – 6000 | 0 |
| | 26 |

| | |
|---|---|
| 150 – 162.5 | 2 |
| 162.5 – 175 | 9 |
| 175 – 187.5 | 7 |
| 187.5 200 | 3 |
| 200 212.5 | 5 |
| 212.5 225 | 0 |
| | 26 |

From 0-200

| | Above | Below Average |
|---|---|---|
| Ft lbs | 17 | 14 |
| Ohms | 14 | 11 |
| Volts | 19 | 8 |

TAE

200-400

| | Above | Below Average |
|---|---|---|
| Ft lbs | 7 | 20 |
| Ohms | 14 | 13 |
| Volts | 11 | 16 |

[illegible] —

| | Above | Below Average |
|---|---|---|
| Ft lbs | 0 | 7 |
| Ohms | 4 | 4 |
| Volts | 1 | 7 |

11 ) 1656 (
150

| | | |
|---|---|---|
| 2583 | 3.4121 | 2583 |
| 17 | 1.2304 | 1656 |
| 152 | 2.1817 | 927 |
| | | 154 |
| 3362 | 3.5266 | 3362 |
| 197.6 | 1.2304 | 2124 |
| | 2.2962 | 1238 |
| | | 206 |
| 88095 | 4.9450 | ~~5244~~ |
| 5180 | 1.2304 | 88095 |
| | 3.7146 | 57685 |
| | | 30410 |
| | | 5068 |

marked too high ←

Average of lamps that ~~[illegible]~~ burnt the resistance coils

17 lamps out of 26 lamps 0-200 minutes

| Coils | Volts | | Ohms | | Ft. lbs | |
|---|---|---|---|---|---|---|
| 26 | 154 | | 191 | | 5500 | |
| 32 | 160 | | 196 | | 5780 | |
| 24 | 160 | | 239 | | 4750 | |
| 69 | 144 | | 194 | | 4735 | |
| 4 | 137 | | 154 | | 5400 | |
| 37 | 148 | | 185 | | 5250 | |
| 3 | 152 | | 188 | | 5446 | |
| 14 | 148 | | 195 | | 5040 | |
| 6 | 154 | | 195 | | 5380 | |
| 10 | 143 | | 178 | | 5090 | |
| 12 | 156 | | 209 | | 4920 | |
| 1 | 147 | 1656 | 188 | 2124 | 5090 | 57685 |
| 33 | 162 | 150 | 233 | 193 | 4996 | 5244 |
| 76 | 150 | | 199 | | 5008 | |
| 56 | 160 | | 201 | | 5642 | |
| 67 | 152 | | 207 | | 4944 | |
| 79 | 156 | 154 | 210 | 206 | 5130 | 5068 |
| | 2583 | | 3362 | | 88095 | |
| | 4 | | 6 | | 4 | |

average 11 lamps 150 ~~Ohms~~ Volts ~~[illegible]~~

Ohms 193 ~~Volts~~

6 lamps

5244 Ft. lbs

TAE

Average

152 Volts 197.6 Ohms 5180

| | | |
|---|---|---|
| + 1762 | 2192 | ~~+~~ 6516 |
| 168 | + 192 | − 62977 |
| 1930 | 2384 | 69493 |
| 1214 | 1512 | 43234 |
| 716 | 1882 | 26259 |
| 143 | 176 | 5252 |

| | |
|---|---|
| 1762 | 3.2466 |
| 12 | 1.0792 |
| 147 | 2.1668 |
| 2192 | 3.3408 |
| 12 | 1.0792 |
| 182.5 | 2.2616 |
| 62977 | 4.7994 |
| 12 | 1.0792 |
| 5260 | 3.7202 |

Average lamps that burnt their resistance coils 200 — 400 minutes from 13 lamps out of 27.

| | | | |
|---|---|---|---|
| | | | 6516 |
| 52 | 168 | 192 | 5656 |
| 30 | 142 | 158 | 4819 |
| 78 | 144 | 191 | 6348 |
| 57 | 164 | 188 | 5253 |
| 74 | 154 | 200 | 4800 |
| 77 | 146 | 197 | 4850 |
| 42 | 148 | 192 | 5001 |
| 59 | 148 | 194 | 5046 |
| 46 | 142 | 177 | 5480 |
| 19 | 146 | 179 | 5317 |
| 65 | 142 | 168 | 5246 |
| 51 | 146 | 180 | 5170 |
| 22 | 146 | 168 | |
| | 1762 | 2192 | 62977 |

Tel

8 lamps

1214
152

1512
186

43234
5404

143 176 5252

147 Volts, 182.5 Ohms, 5260 Ft.lbs.

9)8
9

From 400 - 48
2 out of 8 burnt resistances

81
50

146
158
$\boxed{304}$
152

198
206
$\boxed{404}$
202

4778
5457
$\boxed{10235}$
5117

72

TAE

~~LF~~ 15

Total Lamps 0 – 100 minute

| Volts | Ohms | Ft-lbs |
|---|---|---|
| 1656 | 2124 | 57685 |
| 630 | 786 | 22463 |
| 2286 | 2910 | 80148 |
| 1143 | 1455 | 40074 |
| 163 | 208 | 5725 |

6 + 6 = 12 lamps from SP
100 – 200 minutes

| | | | |
|---|---|---|---|
| | 927 | 1238 | 30410 |
| | 910 | 1147 | 31725 |
| 2 | 1837 | 2385 | 62135 |
| 6 | 918 | 1192 | 31067 |
| | 153 | 199 | 5178 |

Average lamps that did not burn resistance from 0 – 200 minutes
10 lamps

| | | | |
|---|---|---|---|
| 49 | 174 | 213 TAE | 6296 |
| ~~53~~ | | | |
| 95 | 140 | 178 | 4877 |
| ~~68~~ | | | |
| 39 | 152 | 172 | 5950 |
| 35 | 164 | 223 | 5340 |
| | 630 | 786 | 22463 |
| | 157 | 198 | 5616 |
| 7 | 158 | 188 | 5880 |
| 13 | 141 | 183 | 4810 |
| 2 | 143 | 172 | 5260 |
| 8 | 156 | 180 | 5996 |
| 63 | 152 | 191 | 4918 |
| 64 | 160 | 233 | 4867 |
| | 910 | 1147 | 31725 |
| | 151 | 191 | 5287 |

Total

14 ~~8~~ lamps

1214
908
2122
1061
152

1512
1121
2633
1316
188

43234
31864
75098
37549
5364

3.3267
1.27788
2.04979

3.4205
1.27888
2.1317

4.8752
1.27788
3.5964

13 Lamps

716
1183
1899

882
1487
2369

26259
41804
68063

146
3.2785
1.1139
2.1646

182
3.3745
1.1139
2.2606

5230
4.8329
1.1139
3.7190

Average Lamps from 200 - 300 minutes that did not burn resistances

6 lamps

| | | | |
|---|---|---|---|
| 61 | 156 | 179 | 6022 |
| 20 | 154 | 201 | 5230 |
| 70 | 150 | 201 | 4959 |
| 100 | 152 | 171 | 5017 |
| 25 | 142 | 158 | 5656 |
| 31 | 154 | 211 | 4986 |
| | 908 | 1121 | 31864 |
| | 151 | 187 | 5301 |

8 lamps 300 - 400 hours

| | | | |
|---|---|---|---|
| 55 | 164 | 198 | 6017 |
| 96 | 142 | 185 | 4828 |
| 60 | 166 | 214 | 5704 |
| 41 | 148 | 208 | 4660 |
| 84 | 136 | 167 | 4900 |
| 71 | 144 | 169 | 5435 |
| 15 | 146 | 177 | 5346 |
| 16 | 137 | 169 | 4920 |
| | 1183 | 1487 | 41804 |
| | 148 | 187 | 5225 |

5 Total

| | | |
|---|---|---|
| 841 | 1690 | 28819 |
| 304 | 404 | 10235 |
| 1145 | 1494 | 39054 |
| 143 | 187 | 4882 |

400 – 500 minutes

6 lamps that did not burn

| | | | |
|---|---|---|---|
| 38 | 128 | 177 | 4230 |
| 18 | 143 | 204 | 4440 |
| 97 | 140 | 167 | 5199 |
| 34 | 148 | 189 | 5130 |
| 85 | 138 | 171 | 4980 |
| 80 | 144 | 182 | 4840 |
| | 841 | 1090 | 28819 |
| | ~~105~~<br>140 | 182 | 4803 |

Blue at 0 lamps

0 — 100 5 lamps

| Ohms | Volts | Ftlbs |
|---|---|---|
| 213 | 174 | 6290 |
| 217 | 162 | 5357 |
| 196 | 160 | 5760 |
| 185 | 148 | 5250 |
| 172 | 152 | 5950 |
| 983 | 816 | 28607 |
| 197 | 163 | 5721 |

100 — 200 hours

1 lamp Ft lbs.

150 Volts 199 Ohms 5008

Blue. oil clamps
200 – 300 ~~hours~~ minutes

9 lamps

| Volts | Ohms | Ft lbs |
|---|---|---|
| 156 | 179 | 6022 |
| 154 | 201 | 5230 |
| 142 | 158 | 5656 |
| 168 | 192 | 6516 |
| 146 | 180 | 5246 |
| 152 | 204 | 5017 |
| 142 | 158 | 5656 |
| 154 | 211 | 4980 |
| 148 | 194 | 5001 |
| 1342 | 1677 | 49324 |
| 149 | 186 | 5480 |

300-400 ~~hours~~ minutes

Blue at Clamps

6 Lamps

| Volts | Ohms | Ft lbs |
|---|---|---|
| 146 | 1.79 | 5480 |
| 164 | 198 | 6017 |
| 166 | 214 | 5706 |
| 144 | 169 | 5435 |
| 146 | 180 | 5246 |
| 140 | 168 | 5170 |
| 906 | 1108 | 33054 |
| | 185 | 5509 |

66

TAE

~~Lot 1~~

## Blue at clamps

## Average of 27 lamps

|  | Volts | Ohms | ft-lbs |
|---|---|---|---|
| 6 | 879 | 1157 | 29514 |
| 5 | 983 | 816 | 28607 |
| 1 | 150 | 199 | 5008 |
| 9 | 1342 | 1677 | 49324 |
| 6 | 906 | 1108 | 33054 |
| 27 | 4260 | 4957 | 145507 |

27/4260/157
27
156
135
210
189
21

Average Volts = 151 16/27
" Ohms = 152 20/27
" Ft-lbs = 5352 1/4
of 27 lamps.

| Volts. | Ohms. | ft lbs |
|---|---|---|
| 6 – 906 | 1108 | 33054 |
| 9 – 1342 | 1677 | 49324 |
| 5 – 816 | 983 | 28607 |
| 6 – 879 | 1157 | 29514 |
| 1 – 150 | 199 | 5008 |
| 27 – 4093 | 5124 | 145507 |

400 – 500 ammeter

## Blue at clamps
6 lamps

|  |  |  |  |
|---|---|---|---|
| 18 | 143 | 204 | 4440 |
| 81 | 146 | 198 | 4770 |
| 50 | 158 | 206 | 5457 |
| 97 | 140 | 178 | 4877 |
| 34 | 148 | 189 | 5130 |
| 80 | 144 | 182 | 4840 |
|  | 879 | 1157 | 29514 |
|  | 146 | 193 | 4919 |
|  | 197 | 163 | 5721 |
|  | 150 | 199 | 5008 |
|  | 149 | 186 | 5480 |
|  | 151 | 185 | 5509 |

TAE

15 1.1761
91 1.9590
.2171

16.5

5 : [illegible]
[illegible]
~~.2171~~

06990
1.9590
.7400

12. 1.0792
1.9590
.1202

9)13
14.3

13.2

6. 0.7782
1.9590
.8192

6.6

14 1.1461
1.9590
.1871

✓

Lamp 87 1475

resistance burned

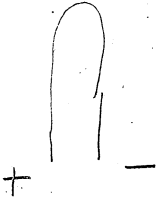
without lamp lighting

✓

Lamp 43

resistance burned

5



TAE

89)86.00(96.6
801
590
534
560

✓

480
20
460

98
27
71

No 86 480

15 m.

Completely wrecked

No 45

1 45 P.M

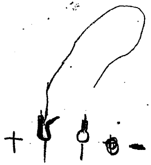
Glass broke

460
45
505

No 75 ✓

2 - 35 P.m

$$\begin{array}{r} 520 \\ 25 \\ \hline 545 \end{array}$$

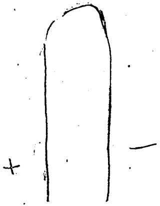


Burnt resistance

No. 93 ✓ ✓

2-40

$$\begin{array}{r} 520 \\ 40 \\ \hline 560 \end{array}$$

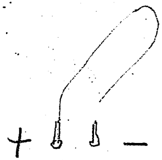


TAE

No 90

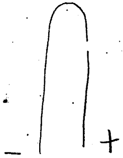
3-32

Burnt resistance



$$\begin{array}{r} 520 \\ 60 \\ \hline 580 \\ 32 \\ \hline 612 \end{array}$$

No 92

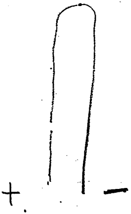


3-45

$$\begin{array}{r} 580 \\ 45 \\ \hline 625 \end{array}$$

No 5

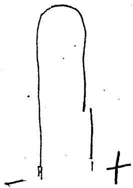
4 P.M



580
60
640

No. 36

4-35



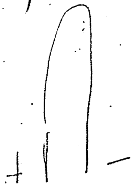
Resistance O.K

640
35
675

No 17 blue on clamper
88 ———
89 ———
98 ———

✓

89 450



640
50
590

TaE

√

98 4-52

Went completly in glass

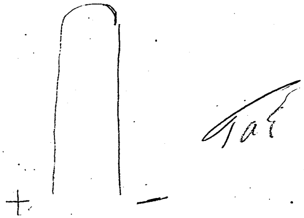
~~[illegible]~~

TAS

Lamps tested

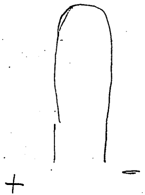
|  | Volts | Ohms | Str lbs |
|---|---|---|---|
| 1 | 143 | 178 | 5090 |
| 17 | broken in test |  |  |
| 40 | 133 | 155.2 | 5050 |
| 47 | 140 | 166 | 5220 |
| 88 | broken in testing ~~149~~ | ~~[illegible]~~ | ~~[illegible]~~ |
| 91 | 140 | 144 | 6030 |

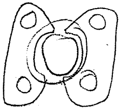
No 1

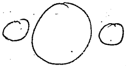


Did not burn resistance

No 90







82 - 127

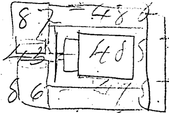
85 - 493

80 - 475

87 - 480

43 - 485

86 - 475



45 - 505

75 - 555

93 - 560

---

# 1st lot - Test lamp (100 Test)

| No of Lamps | Time in Minutes | No of Lamps. | Time in Minutes | No | Time | No | Time |
|---|---|---|---|---|---|---|---|
| 54 | 1 | 13 | 127 | 77 | 281 | | |
| 58 | 10 | 2 | 128 | 31 | 282 | | |
| 49 | 22 | 8 | 130 | 42 | 284 | | |
| 53 | 23 | 63 | 133 | 59 | 295 | | |
| 95 | 27 | 62 | 139 | 46 | 309 | 85 | 473 |
| 68 | 29 | 76 | 142 | 19 | 314 | 80 | 475 |
| 26 | 30 | 56 | 153 | 55 | 324 | 87 | 480 |
| 32 | 40 | 67 | 155 | 96 | 229 | 43 | 485 |
| 24 | 44 | 64 | 172 | 60 | 351 | 86 | 495 |
| 69 | 48 | 79 | 187 | 41 | 352 | 45 | 505 |
| 4 | 56 | 61 | 209 | 84 | 354 | 75 | 555 |
| 37 | 57 | 20 | 214 | 65 | 355 | 93 | 560 |
| 3 | 69 | 30 | 215 | 71 | 356 | 90 | 612 |
| 14 | 70 | 70 | 217 | 15 | 369 | 92 | 625 |
| 39 | 74 | 52 | 220 | 51 | 374 | 5 | 640 |
| 6 | 82 | 78 | 235 | 22 | 376 | 36 | 675 |
| 10 | 87 | + 57 | 239 | 16 | 382 | 89 | 690 |
| 12 | 94 | 100 | 264 | 21 | 385 | 98 | 692 |
| 35 | 95 | 25 | 266 | 98 | 409 | 80 Total lamps | 8042 |
| 72 | 111 | 74 | 269 | 18 | 421 | | |
| 7 | 117 | 83 | 271 | 81 | 440 | | |
| 33 | 123 | | | 50 | 443 | | |
| | | | | 97 | 444 | | |
| | | | | 34 | 459 | | |
| | 1309 | | 3836 | | 8488 | | |
| 82 | 127 | | | | | | |

1309
3836
8488
8042

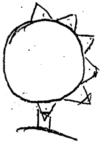
80 | 21675 | 270 min
1600xx
567
560
75

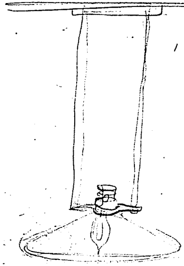
Average time of 1st lot

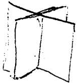
When no 82 & 51 are added makes a total of minutes.

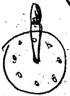
82 / 22841

268 average

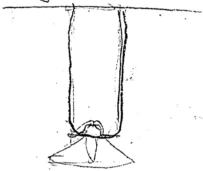
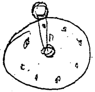
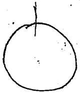








27

35